

Received January 30, 1767.

XXI. *Extract of a Letter from John Howard, Esq; F. R. S. to William Watson, M. D. F. R. S. giving some Observations on the Heat of the Waters at Bath.*

Read April 2, 1767. **W**HEN I had the pleasure of seeing you in London, you thought some explanation of the paper, upon the heat of the Bath-waters, necessary. The observations, I assure you, were made with great care. The three first of them were made at the pump, where the waters are usually drunk. I went several times into the king's, and queen's, baths; and took them, where the springs rise in the king's bath, which is the warmest part, and the most distant from thence the coolest. The pump in that bath corresponded with the upper pump. This I mention; as in the other two baths, the thermometers did not rise, by one degree, so high as in the upper pumps; though I had the pumps worked a considerable time, to warm the pipes. The temperature of the other baths you see in my paper. The hot bath, not being so warm as the king's, at first, surprized me, until I considered their times of filling; and then the comparative slowness of the springs of the hot bath, to those of the king's, accounted for this difference.

The other observations are of various springs, in and about Bath; that near St. James's church is the
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coldest. The springs, at the old and new well houses at Bristol, are very different ; but, on repeated trials, I found them so.

Observations on the Heat of the Bath Waters.

King's bath pump	113°	
Hot bath pump	114	
Crofs bath pump	108	
King's bath *	99 97 100	coolest part
	101 99 103	hottest part
Queen's bath *	97 95 98	coolest part
	98 96 99	warmest
The pump in the bath	113	
Crofs bath	89	coolest part
	90	warmest part
Crofs bath pump	107	
Hot bath	96	coolest part
	97	warmest part
The pump in the hot bath	113	
Pump in the Market-place, Bath		54
Springs on Claverton, and at late Mr. Allen's		47
Springs on Lansdown		45
St. James's spring water		43
Old well house, Bristol		67
New well, ditto		76

The temperature of the above springs taken in November, and December last 1765, by Farenheit's scale (Bird's Thermometer).

* Taken at three different days.

John Howard.

Bath,